**WHAT IS CLAIMED IS:**

1. A zoom system for a microscope, the zoom system comprising a first lens group having lenses (11) and (12), a second lens group having lenses (13) and (14), a third lens group having lenses (15) and (16), and a fourth lens group having lenses (17) and (18) arranged in sequence and aligned along an optical axis, the first and fourth lens groups being mirror images of one another, the second and third lens groups being mirror images of one another, a first air gap between the first and second lens groups, a second air gap between the second and third lens groups, and a third air gap between the third and fourth lens groups, each of the second and third lens groups being movable along the optical axis thereby enabling variation of the first, second, and third air gaps, wherein the lenses (11 through 18) and air gaps have the following geometric and optical properties:

| Boundary surface or Medium | Radius $r_l$ (mm) | Thickness or air gap $d_l$ (mm) [air gaps given at first limit, intermediate position, and second limit] | $n_d$ | $\nu_d$ |
|---|---|---|---|---|
| S1 | 29.48 | | | |
| Lens 11 | | 2.0 | 1.72342 | 37.95 |
| S2 | 18.62 | | | |
| Lens 12 | | 3.5 | 1.49700 | 81.63 |
| S3 | -176.25 | | | |
| Air Gap 1 | | 31.65...23.18...2.00 | | |
| S4 | -123.57 | | | |
| Lens 13 | | 2.0 | 1.57956 | 53.87 |
| S5 | 12.93 | | | |
| Lens 14 | | 3.0 | 1.76182 | 26.52 |
| S6 | 19.69 | | | |
| Air Gap 2 | | 14.70...2.64...15.35 | | |
| S7 | -19.69 | | | |
| Lens 15 | | 3.0 | 1.76182 | 26.52 |
| S8 | -12.93 | | | |

| | | | | |
|---|---|---|---|---|
| Lens 16 | | 2.0 | 1.57956 | 53.87 |
| S9 | 123.57 | | | |
| Air Gap 3 | | 2.65...23.18...31.65 | | |
| S10 | 176.25 | | | |
| Lens 17 | | 3.5 | 1.49700 | 81.63 |
| S11 | -18.62 | | | |
| Lens 18 | | 2.0 | 1.72342 | 37.95 |
| S12 | -29.48 | | | |

2. The zoom system as defined in Claim 1, wherein for the optical glasses used, the relationship to standard straight lines is described by

$$|P_{n\,g,F} = 0.6438 - 0.001628 \cdot \nu_d| > 0.006$$

and/or

$$|P_{n\,C,t} = 0.5450 + 0.004743 \cdot \nu_d| > 0.008,$$ for an Abbé number $\nu_d$.

3. The zoom system as defined in Claim 1, wherein the lenses are formed of optical materials having deviations of the relative partial dispersions from the standard straight lines described by

$$\left|P_{g,F} - P_{n\ \ g,F}\right| > 0.001$$

and

$$\left|P_{C,t} - P_{n\ \ C,t}\right| > 0.002$$

4. The zoom system as defined in Claim 3, wherein lenses (11) and (18) are formed of a material (A), lenses (12) and (17) are formed of a material (B), lenses (13) and (16) are formed of a material (C), and lenses (14) and (15) are formed of a material (D), wherein materials (A), (B), (C), and (D) are described by the following table:

| Material | $n_d$ | $\nu_d$ | Delta $P_{g,F}$ (deviations of the relative partial dispersions) | Delta $P_{C,t}$ (deviations of the relative partial dispersions) |
|---|---|---|---|---|
| A | 1.72342 | 37.95 | 0.0035 | 0.0023 |
| B | 1.49700 | 81.63 | 0.0319 | -0.1133 |
| C | 1.57956 | 53.87 | -0.0012 | -0.0053 |
| D | 1.76182 | 26.52 | 0.0150 | 0.0046 |

5. The zoom system as defined in Claim 1, wherein the lenses are fabricated of materials chosen for a correction of the secondary spectrum.

6. The zoom system as defined in Claim 1, wherein the lenses are fabricated of materials chosen for a correction of astigmatism.

7. The zoom system as defined in Claim 1, wherein the lenses are fabricated of materials chosen for a correction of field curvature.

8. A microscope having a zoom system as defined in Claim 1 and an eyepiece.

9. The microscope as defined in Claim 8, wherein the field curvature of the zoom system is adapted to the field curvature of the eyepiece.

10. The microscope as defined in Claim 9, wherein the microscope is a stereomicroscope.

11. The microscope as defined in Claim 10, wherein the stereomicroscope is a two-channel stereomicroscope.